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Survey of environmental education (EE): case study of higher education institutions in Ningbo

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Abstract

Using qualitative research method, an in-depth interview and field trip investigation were carried out to explore the implementation of environmental education (EE) in higher education institutions (HEI) with an aim to put forward possible solutions and suggestions.

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1. Introduction

As economy grows rapidly in the 21st century, we face a more challenging task in protecting both the environment and the resources, with EE moving up on the agenda. The Environment and EE has become people's concern as the economy reaches highly advanced development throughout the developed countries in the West. Numerous countries have reached consensus on the necessity of EE provision in the school and EE campaigns and initiatives have gained good momentum worldwide [1]. USA passed the National Environmental Education Act as early as 1970, UK set up the EE Council and teachers' institutions in France incorporated EE to their existing educational system. Professors in Germany taught student how to put rubbish and waste into different categories in their environmental courses while UNESCO and United Nations Environment Programme (UNEP) started the International Congress on Environmental Education to further the development of EE worldwide.

Against such a global context, China made environmental protection a key state policy and integrated it into its strategy of national sustainable development.

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China has developed a basic EE system of various levels, forms with Chinese characteristics after over 20 years of efforts. Under the support of State Council, the national planning commission held the 1st national conference on environmental protection in August 1973, during which a document, Decisions on Preserving and Improving the Environment, was born. Later that year, environmental protection programs were opened in several HEIs, including Beijing University. 5 years later, 10 post-graduate students were enrolled into the environmental program in Beijing Normal University. Over 20 environment-related majors and programs were established in more than 30 universities from 1973 to 1983. In November 1981, the academic committee of the State Council approved 25 HEIs for conferring master degree related to the environment. After many surveys and deliberation, environment science was designated as 1st class discipline by the national education authority in June 1991 and its steering committee was established to guide its teaching in HEIs, marking a new stage of EE development in China. We need to attach more importance to EE, however, due to restraints from social, cultural conditions, educational system and objectives. Exam-oriented education system prevents EE from further development in the primary schools while in HEIs, environment science is merely one department or program, not gaining much attention in other departments. With a late start and limited means of delivery in HEIs in China, EE is yet to be enhanced to prove its worth. Besides, we tend to focus more on formalities including “important conferences” and “declarations and documents” rather than more practical issues at a deeper level such as education on environmental ethics [2].

This essay aims to explore the current situation and problems in EE delivery in HEIs and, after field trips and surveys, tries to show the state of environmental awareness and behavior of university students and brings about suggestions on improving EE in HEIs.

1.1. Methodology

Based on detailed interviews and field trips, this project applies qualitative research method in its data analysis and comparison, which was first proposed by Glaser and Strauss in the Grounded Theory in 1990s. It creates theoretical framework after analyzing and comparing all the data and material collected. With no hypothesis or theory initially, the researcher starts from observation in field trips, studies the phenomenon, draws conclusions and comes up with theory [3]. As a top-down approach, it systematically collects data, then marks the core concepts reflecting social phenomenon, and constructs theory connecting these concepts [4]. Grounded Theory needs experiential evidence for support, but its highlight is the new concepts and ideas extracted from the experiential facts rather than the latter.

The process involves the following stages: create theory from the data → keep critical about theory → compare constantly → sample on theory → refer to literature → theoretical evaluation

1.2. Methods of Survey

Less-structured interview is used in collecting data in the research in order to obtain the most natural and intuitive responses from the respondents.

A total of 26 respondents from different HEIs and their departments are interviewed, 9 regular university students, 15 junior college students, 1 teacher and 1 administrator. As the respondents come from different institutions and departments, they are representative samples.

1.3. Samples

A total of 26 HEI students are sampled and surveyed in this research, 86.2% of which in liberal arts and 13.8% in science programs and 65.6% male and female 34.4%. 63.2% of all surveyed students come from Higher Vocational Education Institutions while 36.8% from regular universities. A teacher and an

administrator in an HEI are also surveyed. All respondents realize the environmental crisis and the need to protect the environment and the large majority of them have participated in environmental protection activities before.

2. Description and interpretation of the theme

Environmental awareness of HEI students. HEI students are aware of the importance of environmental protection, but lagging behind in follow-up actions. Only a minority of HEI students understand properly the concept of the environment with the majority of them narrowed it down to the natural environment only. HEI students interviewed in the research are falling behind in daily environmental action compared with their environmental awareness. One female student majoring in international business and trade responds, “it’s very meaningful to take part in environmental protection activities, but the majority are in for extra credits based on moral integrity (social dedication). There would have been few participants if such incentive system had not been in place.”

Table 1. University students’ understanding of the environment

Project	Understanding	Percentage	Definition
The concept of the environment	Full	6.8%	The concept includes natural environment, growth environment and human environment
	Partial	93.2%	Includes natural environment only

As is shown from the figure, 93.2% of HEI students surveyed hold a partial understanding of the concept of the environment, including natural environment only in its definition, with just 6.8% of them gaining a complete picture.

2.1 HEI students’ understanding of the environment and the current challenges

Students surveyed do not respond positively on the quality of the environment since there’s not enough effort in environmental protection but much destruction in nature. One female student from a medical school describes the environment in her university, “greenery on campus has yet to improve. Besides, noise pollution is also a concern because the school is open to the public and accessible to outside traffic.”

Many students surveyed express their worries on the macro environment in which they live.

3. Current situation and problems in Environmental Education (EE) in HEIs

3.1 Students hold strong awareness to the environment, but with weak action capacity

As the society evolves and China begins to implement the strategy of sustainable development, all HEIs must better train their students in overall competency. The effectiveness of EE delivery in HEIs will directly affect students’ environmental efficiency and competence. One male student majoring in environmental monitoring and treatment technology makes comment on how HEI affects students’ environmental awareness and behavior, “this is really essential. After the lesson in the school I realize the severity and urgency of the environmental issue in China. Maybe it’s also because I will be involved in this matter. Back in the middle school, we were doing something to protect the environment under the guidance of the teachers and school administrators. But in the university, we students are doing things on our own. We act when our minds tell us to do something good for the environment.”

3.2 HEI decision-makers have a considerable influence on EE implementation

As administrators of HEIs, the decision-makers have a big say in the distribution of school resources. Thus, their attention and efforts in EE and its delivery are critical factors in successfully establishing a Green University.

If school decision-makers think highly of EP, set up a sound teaching plan on EE and put it into effect, then it will greatly help HEI students enhance their environmental awareness. Some school leaders have made tremendous efforts and won good results. One female student majoring in international trade and business says, “with much support and attention from the administrators, each term our school establishes a detailed plan to encourage students to actively participate in EP events and to provide guidance. Leaders in charge will personally deliver a lecture and arrange teachers to give presentations for an hour or so when we are free. Our school holds an ‘Environment Month’ each year, which joins the ‘Environmental Protection Month’ of Ningbo City in the EP campaign. Gradually, students are becoming more aware in restraining their bad habits and getting involved in (EP) social practice.”

3.3 Lack of EE course in HEI curriculum

The traditional teaching mode doesn’t include quality in environmental science into the HEI curriculum. Quality in environmental education has not been fully carried out, and it still has not fully integrated into the design of pedagogy, teaching objectives and curriculum in quality education as a whole. HEIs nowadays have not listed basic EE course as compulsory in their curricula. In fact, without much coverage, there’s still a shortage of EE course in the educational system.

One female student majoring in financial engineering said, “specific environmental courses have not been opened, and coverage of environment in other courses is quite scarce. It was mentioned at the orientation program when we stepped into the university, but there’s nothing after that.”

3.4 Most university students believe teachers have EP awareness but not enough guidance

Teachers play a significant role in EE delivery and further progress in HEIs. They must be environmentally aware, enhance their own quality in environmental protection, improve knowledge structure and introduce EP education into their instruction. Most HEI students interviewed, however, comment that teachers have not integrated EE into their lessons. One female student in English major says, “not much EE is covered. With the belief that EP education should be done in primary schools, university teachers mainly focus on their specialties in class.”

3.5 The positive role of environmental associations, organizations and volunteers in HEIs

Non-profit EP associations and organization provide not only a platform for students to act to protect the environment, but also a way for students to work together as an organized team with planning and reason. Various environmental associations and organizations arrange publicity campaigns and activities so that both volunteers and other students can participate for exercising existing knowledge and environmental related programs. One female student majoring in medical science comments, “environmental associations and organizations regularly organize their members to volunteer outside the campus, cleaning and collecting garbage for communities. They also carry out publicity campaigns on campus, delivering presentations and putting on EP posters and bulletins for the audience. It is quite effective in enhancing our concern for the environment. The volunteers are quite motivated and I myself take part as well.”

3.6 Varying levels of attention on EE in different HEIs

As the main venue and key player in EE delivery, individual HEIs have paid varying levels of attention and support in putting EE into effect.

The surveys reveal that some HEIs invest more money and effort on hardware construction such as greenery on campus. With the majority of HEIs not aware or sensitive about the environment and its challenges, only a minority have steadily and consciously recognized EE as an effective way in improving students' overall quality. One female student majoring in international business and trade remarks, "the school administrators put much stress on EE and teachers organize environmental events regularly. Debates and parties on the environment will be held during the Environmental Protection Month. Each class will hold competitions under the same theme, with students actively participating. Because our school is famous for its environmental related programs, each year many companies are eager to recruit our graduates (with skills and expertise in this respect)."

4. Coping strategy and suggestions on enhancing EE quality in HEIs

Environmental awareness and quality are key indicators of the civilization of a nation. The essence of preserving the environment is to ensure the basic conditions for survival of both this and future generations. To a large extent, environmental protection relies on the values and behavior of the public, in particular the youth. For a country like China, environmental education (EE) carries more weight and relevance.

EE has already been elevated as an important method in enhancing ideological, scientific and cultural quality of the whole nation and integrated as a key component in our environmental protection and educational causes. EE is a strategic task requiring ceaseless efforts. To keep EE in tune with the changes of the environment and economy, we must strive to update and perfect our educational philosophy, personnel training plan and teachers.

4.1 Government and education authorities transform their mindset in education and help students understand EE better

For a long time, government and education authorities used to lay much emphasis on students' academic performance rather than their overall quality. A capable university student now, however, must have not only the solid professional knowledge and skills, but more importantly the high moral integrity and a sense of responsibility for the nation. Therefore, the government and education authorities must transform their educational mindset and help HEIs stress more on EE for students. Besides, the government should support and award HEIs who have achieved good results in EE and promote EE as a course of excellence in HEIs.

4.2 HEIs include EE into the personnel training plan

As a key document in maintaining teaching quality and graduate standards, personnel training plan is the basis for the design of teaching process, tasks and objectives [5]. As environmental issues become more pressing while EE facilitates the full realization of environmental conservation effort, there's a realistic need to incorporate EE into personnel training plan, helping students cultivate environmental awareness and actions. The ultimate goal is to foster eco-ethic, "an ethic that regards the welfare of only one of several million species as an object of duty"[6] to the welfare of several million on earth.

4.3 HEIs construct a culture of Green University

To help students better understand the environment and its challenges, HEIs should step up cultural construction on campus, introduce environmental related courses and build a culture of Green University. For that purpose, there're 3 main steps. Firstly, strengthen leadership. The school may fund class projects focusing on the environment and encourage students to hold various environmental related events on occasions such as the Earth Day. Besides, the school administrators may guide students in rubbish classification and recycling and environment-themed knowledge contest and so on. Secondly, increase publicity. Radio broadcasting station on campus has a role to play in educating students on environmental issues and Green University. Environmental related photography exhibitions, lectures and non-profit advertisements as well as documentaries should be held on campus to promote environmental awareness among students. Thirdly, tighten management. Supervision and inspection task force should be set up to urge students to help maintain environmental quality.

4.4 HEIs establish a department and a team of teachers on Green University specifically designed for environmental purposes

Due to a lack of relevant knowledge and guidance, students find it hard to make informed decision or take action when confronted with environmental challenges. The school management should set up a team of teachers for environmental roles to alleviate the severe shortage of teachers of environmental education. These trained teachers will, according to the actual conditions of individual university, design appropriate teaching plan and be responsible for the concrete EE implementation. The HEI management must arrange effective training for this team to enhance their environmental knowledge and skills. Meanwhile, an atmosphere must be created to facilitate exchanges and communication for experience and better practices among these teachers so as to broaden their mind and speed up the EE cause in China.

4.5 HEIs combine the characteristics of each specialty with EE delivery and strengthen the training of environmental skills

Since individual students come from different majors and backgrounds, inevitably their exposure to and attitudes on EE may be varied and their intake of environmental knowledge may be different. Therefore, the school should take this into account, identify the connection between the specialty and the environmental program and focus on that connection so that students can integrate their background into the environmental learning process and when in practice, help mitigate the environmental problems. Besides, when EE is delivered, skills training should not be ignored, otherwise, students may be bored with lessons filled with theory only. To better elaborate on the way EE should be delivered, students with medical background may be taught on the treatment of waste water, and those majoring in gardening may receive training on campus greenery.

4.6 EE takes various forms in implementation, with students an active part in the process

EE in HEIs is a comprehensive and joint process implemented in various forms. To reach that objective, the school must not only incorporate EE into the teaching objectives, but also strengthen the environmental awareness among the decision-makers and lay out practical environmental activities. The school may set up environmental related courses, EP association, social practice, science projects and environmental publicity campaigns etc., in which students should play an active role.

4.7 The government sets up a Green University fund

EE in HEIs will inevitably need financial support. For example, EE courses and teachers training will require funds so that HEIs can improve the quality of EE. Only when the government has secured funding on EE can HEIs ensure sufficient resource for the smooth delivery of EE.

4.8 Education authorities set up an evaluation system based on Green University

Existing evaluation system mainly focuses on the infrastructure on campus, teachers' qualifications and students' academic performance, which assesses and guides the provision of HEI education. The huge significance of EE, however, requires its inclusion into the HEI evaluation system to better measure the teaching quality and students' competences of an HEI and to find reasons for such results. In this way, HEIs are expected to find and address the problems in their EE delivery and the excellent ones shall stand out as models to set the pace for a healthy growth of EE in HEIs.

Conclusion

Though students in HEIs have fostered environmental awareness and strong will, they are not motivated enough in participating in environmental related programs and activities.

EE in HEIs need to combine theory with practice so as to make the learning process interesting and practical.

To enhance the quality of EE, HEIs must update and improve teaching philosophy, personnel training plan, contents and methods of instruction and teachers' training. More efforts must be made in exploring better methods and ways in implementing green education under the new context and in producing highly-qualified and innovative personnel.

Limitations

Respondents in the survey are made up of students, teachers and administrators of HEIs, all of whom are important components of a HEI and suitable for this qualitative research. Given the considerable differences in features and role definitions between different HEIs, more research is needed to further investigate EE delivery in various types of HEIs. For instance, there're differences between higher vocational colleges and regular universities, art academies and comprehensive institutions, and different priorities in HEIs may lead to varying amounts and levels of attention and support on EE. Furthermore, HEIs from different regions may also have different ideas and results in EE delivery. Tertiary institutions in eastern China and those in the remote west have distinct differences in financial resources and support in EE. Lastly, to draw a more accurate picture on how EE in HEIs influences students in both environmental awareness and action, more samples and respondents need to be included into this project so as to gain findings and analysis based on quantitative research.

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